

Massachusetts STD, HIV/AIDS and Viral Hepatitis Surveillance Report: 2011



Massachusetts
Department of Public Health

Bureau of Infectious Disease Prevention, Response and Services

Division of STD Prevention and HIV/AIDS Surveillance
Division of Epidemiology and Immunization

STD, HIV/AIDS AND VIRAL HEPATITIS SURVEILLANCE REPORT 2011
Massachusetts Department of Public Health
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Executive Summary 2011

The annual publication of the Massachusetts STD, HIV/AIDS, and Viral Hepatitis Surveillance Report provides an occasion to reflect upon trends in these diseases within the Commonwealth of Massachusetts.

In 2011, the following trends existed with regard to the three most commonly reported bacterial STIs in Massachusetts:

- Infectious syphilis (primary, secondary, and early latent syphilis) incidence rates continued to increase yearly – a trend which began in the last quarter of 2007. Although infectious syphilis remains relatively rare overall, the disease remained at epidemic levels among men who have sex with men.
- Gonorrhea incidence decreased in 2011 by 6%. Gonococcal disease primarily remains concentrated within non-white populations from major urban centers.
- Incident chlamydia infections continue to increase with more provider screening. Increased case reporting is reflective of increased electronic laboratory reporting, and/or access to screening with more sensitive laboratory testing, perhaps not true increases in incidence of disease. Moreover, recent research has revealed gaps in our understanding of what proportion of chlamydia cases will progress to complications such as epididymitis, pelvic inflammatory disease, ectopic pregnancy, infertility, or chronic pelvic pain.¹

Regarding HIV/AIDS, notable trends in 2010² included the following:

- Newly diagnosed infections and deaths continued to decline but the actual number of persons known to be living with HIV/AIDS in Massachusetts increased to over 17,000 in 2010 and over 18,000 in 2011 because survival continued to improve.
- Similar to other sexually transmitted infections, black and Hispanic/Latino residents have higher rates of HIV infection compared to white residents.
- Male with male sex remains the single largest identified exposure mode among newly diagnosed HIV cases.

With regard to viral hepatitis, we observed the following trends in 2011:

- Chronic confirmed cases of hepatitis B continued to decline, a trend due in large part to increasing levels of immunity against hepatitis B in adults at risk of infection and almost universal immunization of children against hepatitis B.
- There has been an overall decline in the number of newly diagnosed hepatitis C cases reported in Massachusetts since 2004. However, at approximately 79 cases per 100,000 population in 2011, hepatitis C remains one of the highest volume reportable infections. There continue to be a high number of hepatitis C cases reported among adolescents and young adults, indicating ongoing transmission among young people injecting drugs in the state.

¹ Gottlieb et al. Summary: the natural history and immunobiology of *chlamydia trachomatis* genital infection and implications for chlamydia control. *Journal of Infectious Diseases* 201:S190-204, 2010.

² Due to reporting delays related to site-specific reporting issues, all HIV/AIDS data reflect HIV diagnosed through 2010.

Highlighted on pages 15–22 are trends within special populations disproportionately affected by STIs, HIV/AIDS, and/or viral hepatitis. Massachusetts data are reflective of a number of national trends among women, minorities (both sexual and racial/ethnic minorities), and youth. Where we differ is in the fact that our surveillance has revealed some increasing gaps among certain racial/ethnic and sexual minorities in reported STIs. It remains to be determined whether this reflects improved access to care leading to more screening and identification of infection, or true increases in infection within certain minority populations. Improvements in reporting systems, which provide more complete information on other possible risk and protective associations, are critical for improving our understanding of disparities in reportable diseases.

The focus of this annual surveillance report is necessarily on diseases reportable to the state and cannot address all determinants of health. However, it should be recognized that sexually transmitted infections, including HIV/AIDS and viral hepatitis, occur at the nexus of individual human behavior, community risk, clinical diagnosis and treatment, and public health prevention and control. The intended audience for this annual surveillance report includes the clinicians and the laboratory professionals who report these cases, as well as the community organizations, local public health departments, policymakers, and researchers who are interested in the sexual health and well-being of residents of the Commonwealth of Massachusetts. We welcome feedback, and invite you, the reader, to begin by thinking in terms of disease statistics, but end by acting in terms of health promotion.

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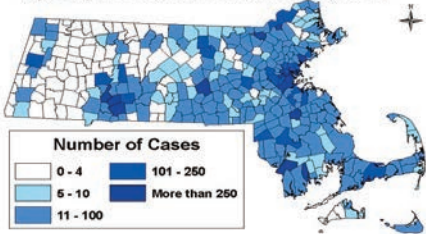
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There were 22,869 reported chlamydia infections in Massachusetts in 2011. Chlamydia infection is widely distributed in Massachusetts.

The geographic distribution of cases within the state in 2011 was similar to 2010.

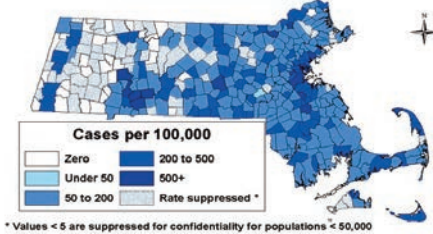
Additional information about chlamydia and other STIs is available online at www.mass.gov/dph/cdc/std.

Reported Chlamydia Infection Cases by City/Town, Massachusetts, 2011



Data Source: MDPH, Bureau of Infectious Disease

Chlamydia Incidence Rates by City/Town Massachusetts, 2011



* Values < 5 are suppressed for confidentiality for populations < 50,000

Data Source: MDPH, Bureau of Infectious Disease

The overall Massachusetts chlamydia infection rate is 349 per 100,000. The highest incidence rates of reported chlamydia infections are in large urban areas around Boston and Springfield.

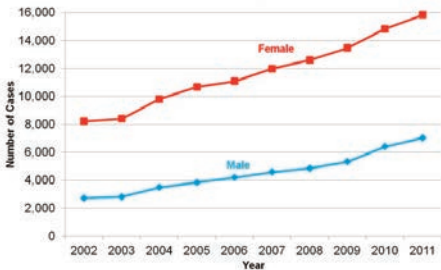
Throughout the state, the majority of cities and towns fall into the 50 to 200 cases per 100,000 population range.

The total number of reported chlamydia infection cases in Massachusetts has more than doubled in the past ten years, from 10,924 in 2002 to 22,869 in 2011.

There was an 8% increase in the number of cases reported in 2011 compared to 2010.

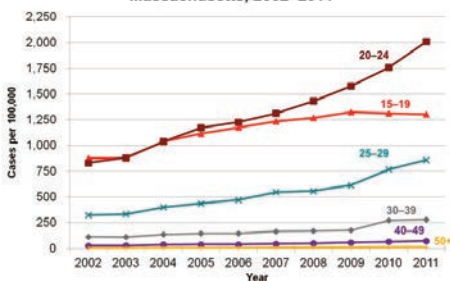
Of the total reported cases in 2011, 7,024 were among men and 15,823 were among women. The greater number of chlamydia cases among women is a combined effect of increased incidence and a higher level of screening as compared to men.

Chlamydia Cases by Gender, Massachusetts, 2002–2011



Data Source: MDPH, Bureau of Infectious Disease

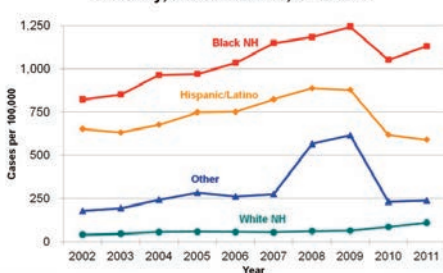
Chlamydia Incidence Rate per 100,000 by Age, Massachusetts, 2002–2011



In 2011, the incidence of reported chlamydia infection in Massachusetts among adolescents (ages 15-19) and young adults (ages 20-24) exceeded 1,300 and 2,000 per 100,000, respectively. Please note, caution should be used in comparing STI rates from the period 2002 to 2009 to rates from 2010 and 2011 as the former are calculated with US Census 2000 data and the later US Census 2010. See section IV on page 24, for further detail.

Historically, members of communities of color have been disproportionately affected by STIs. In 2011, compared to the white population, the incidence rate of reported chlamydia infection in Massachusetts was ten times higher in the black and five times higher in the Hispanic/Latino population. Disparities in the rate of chlamydia infection in Massachusetts have decreased in recent years. Please note that cases with unknown race/ethnicity are no longer included in this analysis, see section IV on page 24 for further detail. Since 2008, changes in electronic reporting of laboratory results indicating STI cases to MDPH resulted in an increased proportion of STI cases being categorized as “other” race. Thus, as of 2008, increases in the rate of STIs in the “other” category may be related to electronic reporting rather than increase in incidence.

Chlamydia Incidence Rate per 100,000 by Race/Ethnicity, Massachusetts, 2002–2011



INFERTILITY PREVENTION PROJECT, PERCENT POSITIVE FOR CHLAMYDIA INFECTION, MASSACHUSETTS, 2011

Since 1997, the Division of STD Prevention has participated in a Centers for Disease Control and Prevention (CDC)-funded Infertility Prevention Project. The goal of this project is to reduce infertility and other health consequences of chlamydia infection through increased screening and treatment of women who are at higher risk for infection. In 2011, as part of the Infertility Prevention Project, 17,606 specimens were tested for chlamydia infection. Test results from participating sites have yielded the following:

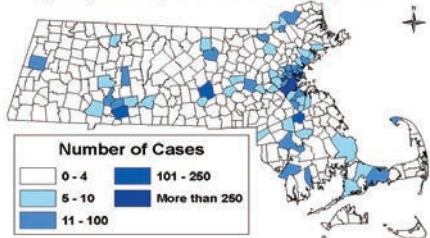
PERCENT POSITIVE FOR CHLAMYDIA TRACHOMATIS		
SITE TYPE (number tested)	FEMALES	MALES
School-Based Health Centers (n=1,023)	8%	9%
Correctional Facilities (n=2,366)	4%	8%
Family Planning Clinics (n=11,053)	6%	16%
STD Clinics (n=3,164)	5%	6%

Data Source: MDPH, Bureau of Infectious Disease

The overall number of reported cases of gonorrhea in Massachusetts in 2011 was 2,347 cases, a 6% decrease from the previous year. Although gonorrhea is widely distributed in Massachusetts, cases are more prevalent in urban locations.

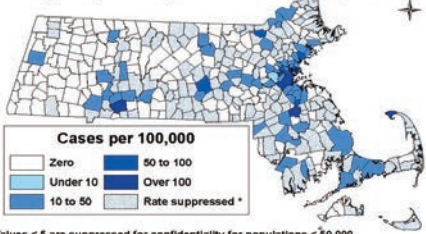
Additional information about gonorrhea and other STIs is available online at www.mass.gov/dph/cdc/std

Reported Gonorrhea Cases by City/Town, Massachusetts, 2011



Data Source: MDPH, Bureau of Infectious Disease

Reported Gonorrhea Incidence Rates by City/Town, Massachusetts, 2011



* Values < 5 are suppressed for confidentiality for populations < 50,000

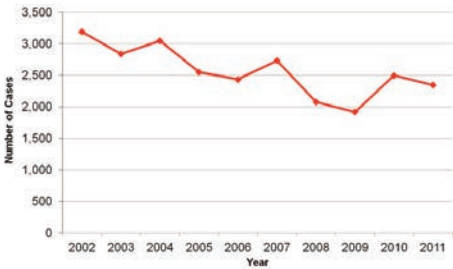
Data Source: MDPH, Bureau of Infectious Disease

The overall Massachusetts gonorrhea infection rate is 36 per 100,000. The highest incidence rates of reported gonorrhea are in Provincetown, Brockton, Boston and Springfield.

The highest concentration of cases is in the eastern part of the state.

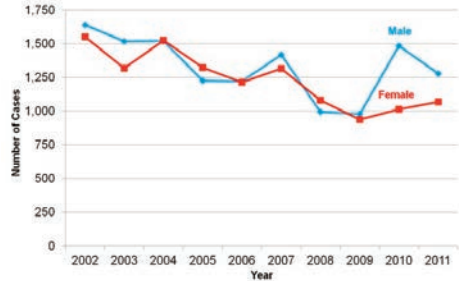
From 2002 to 2011, the number of reported gonorrhea cases fluctuated with both year-to-year increases and decreases over the ten-year period. Overall, there are fewer gonorrhea cases reported in recent years; the number of cases decreased by 26% from 2002 (N=3,191) to 2011 (N=2,347).

Reported Cases of Gonorrhea, Massachusetts, 2002–2011



Data Source: MDPH, Bureau of Infectious Disease

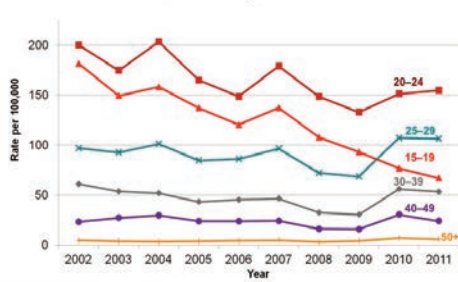
Gonorrhea Cases by Gender, Massachusetts, 2002–2011



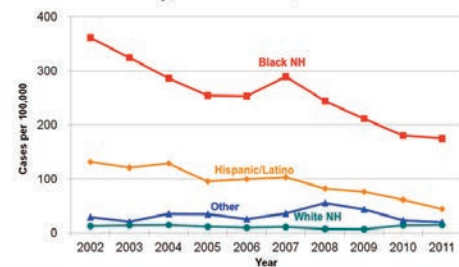
From 2002 to 2009, the male-to-female ratio of reported gonorrhea cases ranged from 0.9 to 1.2. The male-to-female ratio peaked at 1.5 in 2010 and then decreased to 1.2 in 2011 (1.2 = 1,277 male cases/1,069 female cases).

From 2002 to 2011, the rate of gonorrhea incidence per 100,000 was highest among young adults ages 20 to 24 years (155 per 100,000). In 2011, the gonorrhea incidence rate among young adults (ages 20 to 24 years old) was four times the state-wide incidence rate; among 25 to 29 year olds (106 per 100,000) it was three times the state-wide incidence rate. Please note, caution should be used in comparing STI rates from the period 2002 to 2009 to rates from 2010 and 2011 as the former are calculated with US Census 2000 data and the later US Census 2010. See section IV on page 24, for further detail.

Gonorrhea Incidence Rate per 100,000 by Age, Massachusetts, 2002–2011



Gonorrhea Incidence Rate per 100,000 by Race/Ethnicity, Massachusetts, 2002–2011



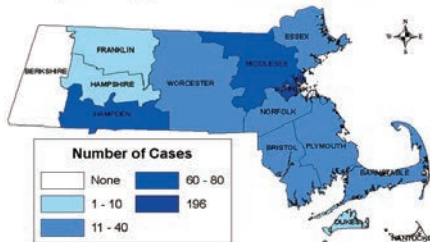
In 2011, in Massachusetts, the reported gonorrhea incidence rate was 12 times higher in the black population (175 cases per 100,000) and three times higher in the Hispanic/Latino population (44 cases per 100,000) compared to the white population (15 cases per 100,000). In 2008, changes in electronic reporting of laboratory results indicating STI cases to MDPH resulted in an increased proportion of STI cases being categorized as “other” race. Thus, as of 2008, increases in the rate of STIs in the “other” category may be related to electronic reporting. Please note that cases with unknown race/ethnicity are no longer included in this analysis, see section IV on page 24 for further detail.

SYPHILIS

SYPHILIS

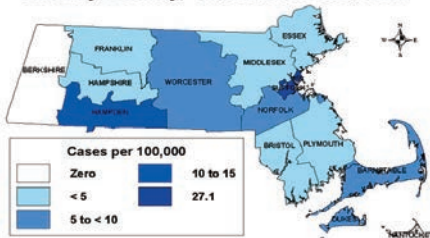
In 2011, there were 500 reported infectious syphilis cases (primary, secondary, and early latent) in Massachusetts. Although infectious syphilis cases have been reported in almost all counties, 39% of the cases (196) were reported in Suffolk County. Compared to last year, increases of 129% and 89% were seen in Hampden and Barnstable Counties, respectively. Additional information about infectious syphilis is available online at www.mass.gov/dph/cdc/std.

Reported Infectious Syphilis Cases by County, Massachusetts, 2011



Data Source: MDPH, Bureau of Infectious Disease

Reported Infectious Syphilis Incidence Rate by County, Massachusetts, 2011

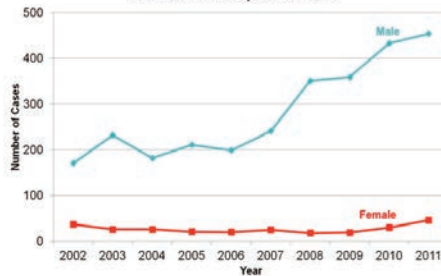


Data Source: MDPH, Bureau of Infectious Disease

In 2011, Bristol, Essex, Franklin, Hampshire, Middlesex and Plymouth Counties had syphilis incidence rates of less than five cases per 100,000 population. Barnstable, Dukes, Norfolk and Worcester counties had rates between five and ten cases per 100,000 population. Hampden County had a rate between 10 and 15 cases per 100,000. Berkshire and Nantucket Counties had a rate of zero. Suffolk County had the highest syphilis rate at 27 cases per 100,000 population.

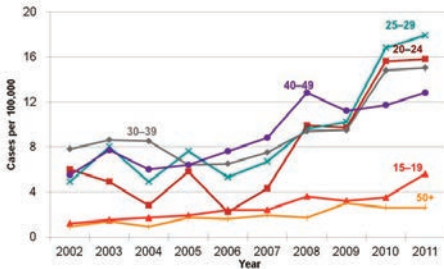
In Massachusetts, the male-to-female ratio of infectious syphilis cases increased from 5 to 1 in 2002, to 11 to 1 in 2011. This shift reflects an increase in the number of infectious syphilis cases diagnosed in men who have sex with men. This trend has also been observed in other regions of the United States. Although the number of female cases is much smaller than male, it has more than doubled in the past four years from 2008 (N=18) to 2011 (N=46).

Infectious Syphilis Cases by Gender Massachusetts, 2002–2011



Data Source: MDPH, Bureau of Infectious Disease

Reported Infectious Syphilis Incidence Rate per 100,000 by Age, Massachusetts, 2002–2011



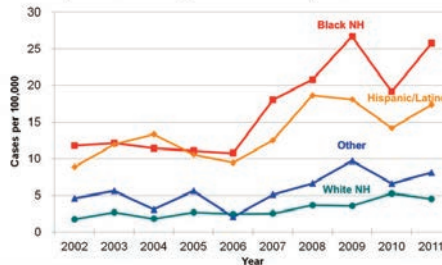
Data Source: MDPH, Bureau of Infectious Disease

In contrast to chlamydia infection and gonorrhea, which tend to occur more frequently among adolescents and young adults, the majority of infectious syphilis cases are reported in individuals age 30 years and above. However, in recent years, the proportion of cases among people in their twenties has increased and the rate of syphilis infection per 100,000 was highest among 20-24 and 25-29 year olds in 2010 and 2011. Please note, caution should be used in comparing STI rates from the period 2002 to 2009 to rates from 2010 and 2011 as the former are calculated with US Census 2000 data and the later US Census 2010.

See section IV on page 24, for further detail.

In 2011, the reported infectious syphilis incidence rate was five times higher in the black population (26 cases per 100,000) and three times higher in the Hispanic/Latino population (17 cases per 100,000) compared to the white population (5 cases per 100,000). Please note that cases with unknown race/ethnicity are no longer included in this analysis, see section IV on page 24 for further detail.

Reported Infectious Syphilis Incidence Rate per 100,000 by Race/Ethnicity, Massachusetts, 2002–2011



NOTE: Cases with unknown race/ethnicity are excluded from this analysis and account for an average of 6% of infectious syphilis cases reported from 2002-2011. Data Source: MDPH, Bureau of Infectious Disease, NH=Non-Hispanic

SYPHILIS IN MEN THAT HAVE SEX WITH MEN (MSM)

In Massachusetts, MSM represent a higher-risk group for infectious syphilis. Of the 500 infectious syphilis cases in 2011, 363 (73%) were reported in MSM. Forty-two percent (N=151) of the MSM with infectious syphilis disclosed that they were co-infected with HIV. Forty percent (N=144) of the infectious syphilis cases in MSM were reported in Suffolk County.

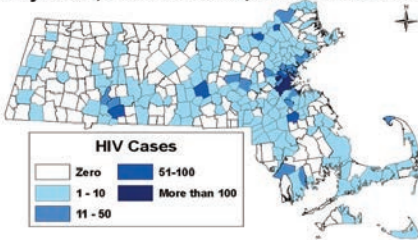
Transmission of syphilis can occur between men through unprotected oral and anal sex. Additional information and resources regarding MSM and STIs is available online at:

<http://www.mass.gov/eohhs/gov/departments/dph/prog-a-j/bcdc/factsheets.html>

Of the 351 cities and towns in Massachusetts, 194 (54%) had at least one newly diagnosed HIV infection reported from 2008 to 2010. The majority of newly identified HIV infections were reported in large urban areas.

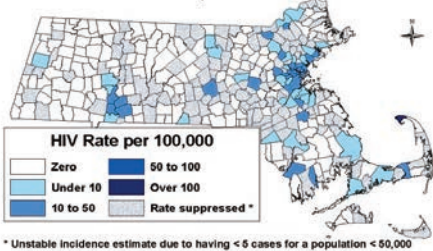
HIV infection case and incidence data by city and town are available online at www.mass.gov/dph/cdc/aids. Additional information is available through the MDPH HIV/AIDS Epidemiologic Profile at the same weblink.

Newly Diagnosed HIV Infection Cases by City/Town, Massachusetts, from 2008 to 2010



Data Source: MDPH, Bureau of Infectious Disease

Average HIV Incidence Rate by City/Town, Massachusetts, from 2008 to 2010



* Unstable incidence estimate due to having < 5 cases for a population < 50,000

Data Source: MDPH, Bureau of Infectious Disease

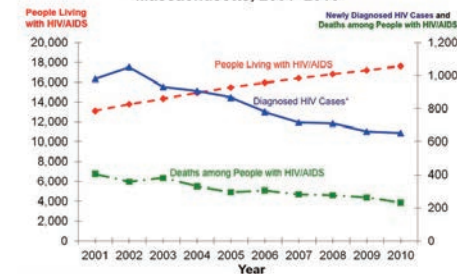
Of those cities and towns where HIV infections were diagnosed within the three-year period 2008 to 2010, the majority (72%) had rates of under 10 per 100,000 population.

Provincetown had the highest rate of HIV infection diagnosis at 358 per 100,000 population.

In 2010, there were 652 newly diagnosed HIV infections and 232 deaths among people reported with HIV/AIDS in Massachusetts.

Newly diagnosed HIV infections and deaths among people with HIV/AIDS continue to decline each year, but because newly diagnosed infections continue to exceed the number of deaths annually, the number of people known to be living with HIV/AIDS in Massachusetts increased from 13,095 on December 31, 2001 to 17,645 on December 31, 2010.

People Living with HIV/AIDS, Diagnosed HIV Infection Cases, and Deaths among People with HIV/AIDS Massachusetts, 2001–2010

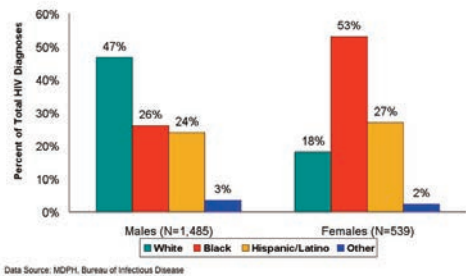


*Includes people concurrently or subsequently diagnosed with AIDS

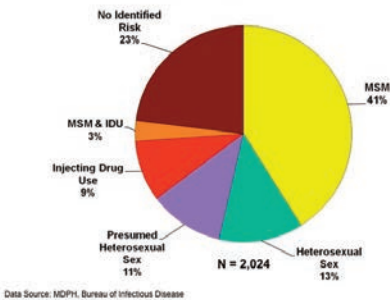
Data Source: MDPH, Bureau of Infectious Disease

From 2008 to 2010, of the 2,024 newly diagnosed HIV infections in Massachusetts, 1,485 (73%) were in men and 539 (27%) were in women. Most of the newly diagnosed HIV infections in men were in white men, whereas the majority of newly diagnosed HIV infections in women were in black women.

Percent Distribution of Newly Diagnosed HIV Infection by Gender and Race/Ethnicity Massachusetts, 2008–2010



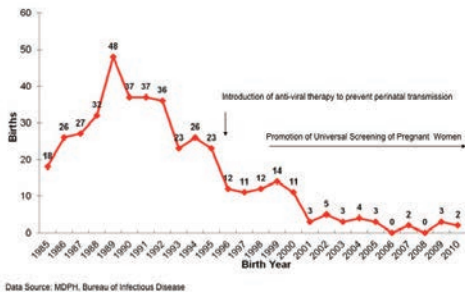
Newly Diagnosed HIV Infection by Exposure Mode Massachusetts, 2008–2010



From 2008 to 2010, the primary exposure mode reported among newly diagnosed cases of HIV infection in Massachusetts was male-to-male sex at 41%, followed by heterosexual sex (13%), presumed heterosexual sex (11%), and injection drug use (9%). Twenty-three percent of newly diagnosed cases were reported without adequate risk information.

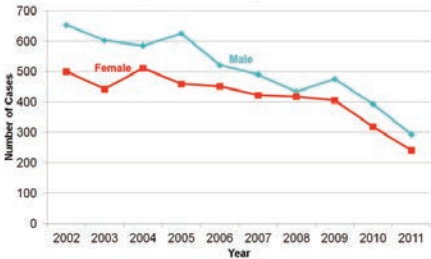
Since the mid-1990s, Massachusetts experienced a dramatic reduction in mother-to-child transmission of HIV infection. From 2001 to 2010, the number of HIV-infected newborns identified ranged from zero (in 2006 and 2008) to five (in 2002). The decline is attributed to improvements in HIV screening during pregnancy and the treatment of HIV-infected women with anti-retroviral therapy. However, every case of mother-to-child transmission remains a sentinel event mandating investigation to identify if new systems can be put in place to assure maximum efforts to prevent vertical transmission.

Identified Mother-to-Child Transmission of HIV Infection By Year of Birth, Massachusetts, 1985–2010



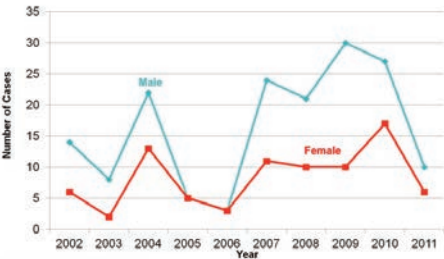
The number of confirmed cases of chronic hepatitis B reported to Massachusetts has been declining since 2005. In 2011, 538 confirmed chronic cases were reported. This number is likely to increase due to continued processing of case reports and case confirmation. Even so, there is an overall downward trend to both confirmed and probable cases of hepatitis B infection (data not shown), due in large part to increasing levels of immunity against hepatitis B in adults at risk of infection and almost universal immunization of children against hepatitis B.

Confirmed Chronic Hepatitis B Cases by Gender and Year Massachusetts, 2002–2011



Note: N=9,255 and excludes 26 missing gender and 1 transgender
Data Source: MDPH, Bureau of Infectious Disease

Confirmed Acute Hepatitis B Cases by Gender and Year Massachusetts, 2002–2011

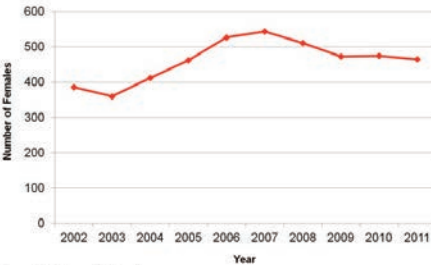


Note: N=247 and excludes 1 missing gender
Data Source: MDPH, Bureau of Infectious Disease

Sixteen confirmed cases of acute hepatitis B were identified in 2011. Confirmation of acute infection requires additional information, including specific laboratory test results and symptom information.

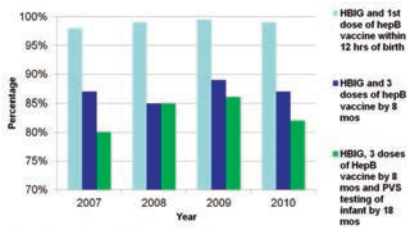
It is recommended that pregnant women be screened for hepatitis B during pregnancy to allow case management to begin early and prevent transmission of the virus to infants. Since 2007, the Perinatal Hepatitis B Program has partnered with local public health programs to increase identification of household and sexual contacts of hepatitis B surface antibody (HBsAg)-positive pregnant women in an effort to reduce the risk of maternal-child transmission of hepatitis B.

Hepatitis B Positive Pregnant Females Identified in Massachusetts, 2002–2011



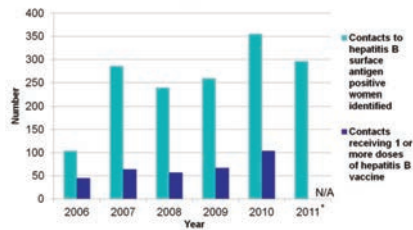
Data Source: MDPH, Bureau of Infectious Disease

Infants Born to Hepatitis B Surface Antigen Positive Females in Massachusetts, 2007–2010



HBIG= Hepatitis B Immune Globulin, PVS = Post-vaccine serological (testing)
Data Source: MDPH, Bureau of Infectious Disease

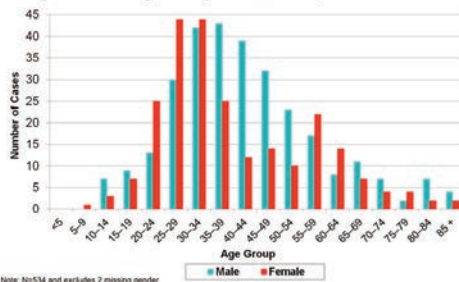
Household and Sexual Contacts to Hepatitis B Surface Antigen Positive Pregnant Females in Massachusetts, 2006–2011



* 2011 number of contacts to HBsAg positive women identified are preliminary and number of contacts receiving 1 or more doses of vaccine are not yet available. Data Source: MDPH, Bureau of Infectious Disease

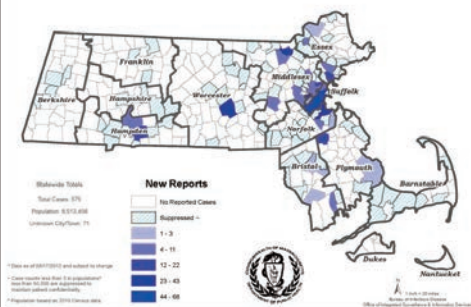
Due to enhanced surveillance focused on identifying pregnant women who are hepatitis B positive, a large number of the hepatitis B cases identified and reported in 2011 were in women between the ages of 25 and 44 years. While efforts are made to identify infection among the household and sexual contacts of these women, there are many barriers to getting those partners tested.

Confirmed Chronic Hepatitis B Cases Reported in 2011 by Five Year Age Groups and Gender, Massachusetts



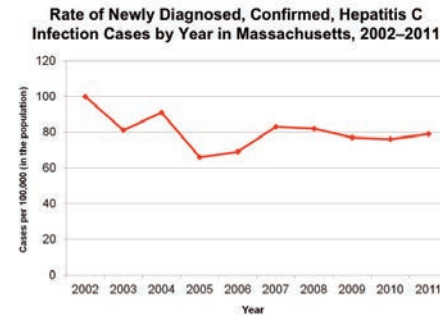
Note: N=534 and excludes 2 missing gender
Data Source: MDPH, Bureau of Infectious Disease

Confirmed Chronic Hepatitis B Cases by Massachusetts City/Town: 2011*

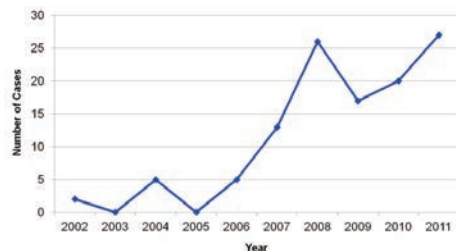


Most newly diagnosed cases of chronic hepatitis B are in people living in urban areas such as Boston, Worcester, Lowell and Springfield.

There has been an overall decline in the number of newly diagnosed hepatitis C infection cases reported in Massachusetts since 2004. However, the overall number of cases reported remains very high with 7,000 to 10,000 newly diagnosed probable and confirmed cases reported to MDPH annually since 2002. There are hepatitis C cases reported to MDPH for 2011 that have yet to be fully processed, so this number is likely to increase. Hepatitis C remains one of the highest volume infectious diseases reported in Massachusetts.



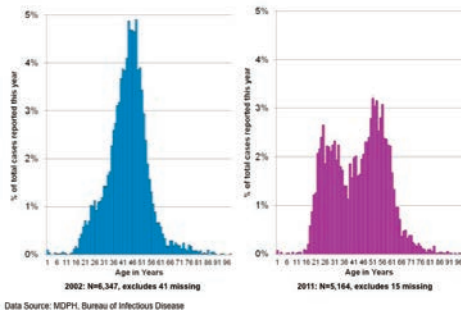
Number of Confirmed Acute Hepatitis C Cases by Year in Massachusetts, 2002–2011



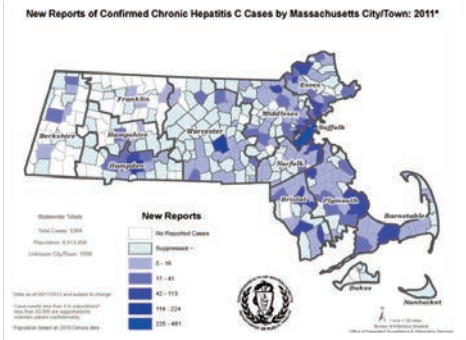
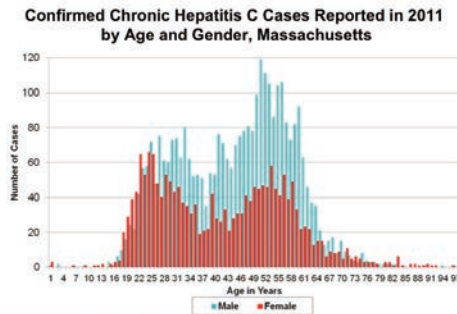
Improvements in surveillance have also allowed for better identification of acute cases of hepatitis C. Twenty-seven acute cases were confirmed in 2011. Identification of acute cases requires information on hepatitis A and B test results, serum liver enzyme tests and symptoms. One-hundred and thirty-two cases of hepatitis C reported in 2011 matched the acute case definition, but hepatitis A or B laboratory results were not available to rule out other causes of viral hepatitis. Acute cases of hepatitis C are reported in CDC’s annual summary of notifiable diseases, while chronic hepatitis C is not.

The age distribution of hepatitis C cases reported in Massachusetts has changed between 2002 and 2011. In 2002 the reported cases were distributed in a bell-shaped curve with the age peak between the ages of 44 and 50 years. In 2011, the reported cases were distributed in a bi-modal curve with one peak at 25 years of age and a second at 51 years.

Hepatitis C Case Distribution by Age: 2002 Versus 2011



More hepatitis C cases reported in 2011 are identified in males than in females in almost all age groups, except the 15 to 24 year age group, where the number of females is slightly higher than males.

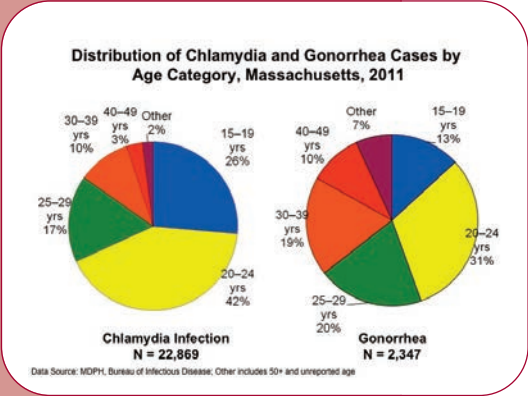


Cases of hepatitis C are reported in communities across Massachusetts, with more cases being identified in people living the urban areas of Boston, Worcester, and Springfield.

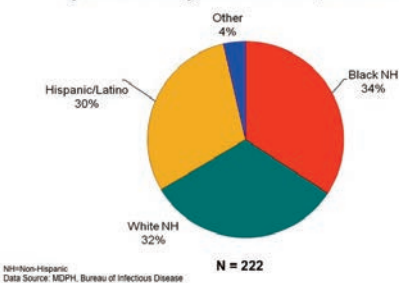
STDs IN ADOLESCENTS AND YOUNG ADULTS

Compared to older adults, sexually active adolescents and young adults are at higher risk for acquiring STIs for a combination of behavioral, biological and cultural factors. The higher prevalence of STIs among adolescents also may reflect multiple barriers to accessing quality STD prevention services, including lack of insurance or other ability to pay, lack of transportation, discomfort with facilities and services designed for adults, and concerns about confidentiality. (Source: CDC. Sexually Transmitted Disease Surveillance, 2010. Atlanta: U.S. Department of Health and Human Services; 2011.)

In 2011, 68% of reported chlamydia infection cases and 44% of reported gonorrhea cases were in adolescents and young adults (ages 15-24).

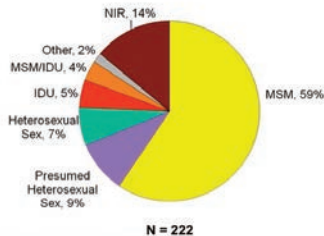


Percent Distribution of Newly Diagnosed HIV Infection Cases in Adolescents and Young Adults (ages 15–24) by Race/Ethnicity, Massachusetts, 2008–2010



From 2008 to 2010, reported newly diagnosed HIV infections among adolescents and young adults in Massachusetts had the following racial/ethnic distribution: black (non-Hispanic) (34%), white (non-Hispanic) (32%), Hispanic/Latino (30%), and other (4%).

Percent Distribution of Newly Diagnosed HIV Cases in Adolescents and Young Adults (Ages 15-24) by Exposure Mode, Massachusetts, 2008–2010



N = 222
MSM=Male-to-Male Sex, NIR=No Identified Risk, IDU=Injection Drug Use
Data Source: MDPH, Bureau of Infectious Disease

From 2008 to 2010, in Massachusetts, the primary mode of exposure for reported, newly diagnosed HIV infection cases in adolescents and young adults was male-to-male sex (59%), followed by presumed heterosexual sex (9%), heterosexual sex (7%), and injecting drug use (4%). Fourteen percent of adolescents and young adults were reported with no risk information.

The Youth Risk Behavior Survey (YRBS) is performed biennially among a national sample of 9th-12th grade students. A review of data provided from the Massachusetts YRBS over the past two decades indicates that three markers of risky youth sexual behavior (ever having had sex, first sex before age 13 years, and four or more lifetime sexual partners) reached all-time lows in 2003 (respectively 41%, 5%, and 10%), and after slight increases of potential concern in 2009, returned to similar lows in 2011 (to 42%, 4%, and 11%). In contrast, two markers of protective sexual behaviors, use of condoms at last sex and being taught about HIV/AIDS in school, have shown declines from previous gains (respectively 58% in 2011 down from 65% in 2005, and 84% in 2011 down from 93% in 2005).

SEXUAL BEHAVIORS AMONG MASSACHUSETTS HIGH SCHOOL STUDENTS, 2003–2011

	AFFIRMATIVE RESPONSES (percent)				
	2003	2005	2007	2009	2011
Lifetime sexual intercourse	41	45	44	46	42
Sexual intercourse before age 13	5	5	6	5	4
Four or more lifetime sexual partners	10	13	12	13	11
Condom use at last sexual intercourse	57	65	61	58	58
Taught in school about AIDS or HIV	92	93	89	87	84

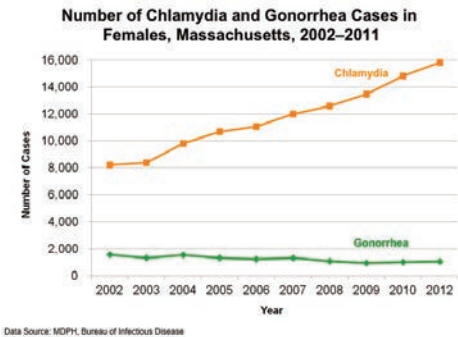
Data source: Massachusetts Department of Elementary and Secondary Education, Youth Risk Behavior Surveillance System

STDs AND WOMEN

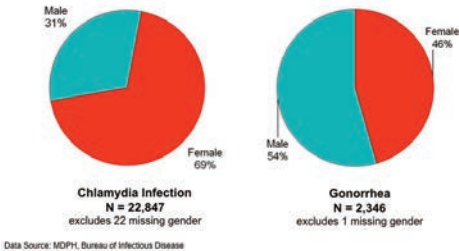
Complications of STIs are greater and more frequent among women than men due to two primary factors. First, biologically, women are more likely than men to become infected if exposed. Second, STIs are more likely to remain undetected in women, resulting in delayed diagnosis and treatment, and ultimately more untreated infections leading to complications. (Source: The Hidden Epidemic, Institute of Medicine, National Academy Press, Washington, D.C., 1997.)

Untreated STIs in women can lead to serious health consequences, including pelvic inflammatory disease, infertility, ectopic pregnancy and cervical cancer.

Unlike gonorrhea, reported chlamydia infection in Massachusetts is more common in women. From 2002 to 2011, the number of chlamydia cases in women increased by 93%, in part due to increased adoption of routine screening by Massachusetts healthcare providers, as recommended by the Centers for Disease Control and Prevention.



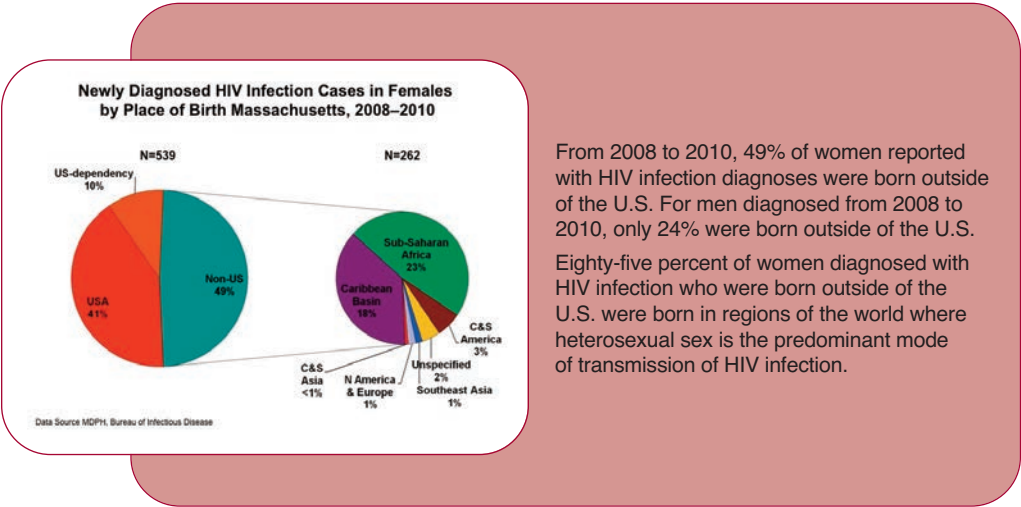
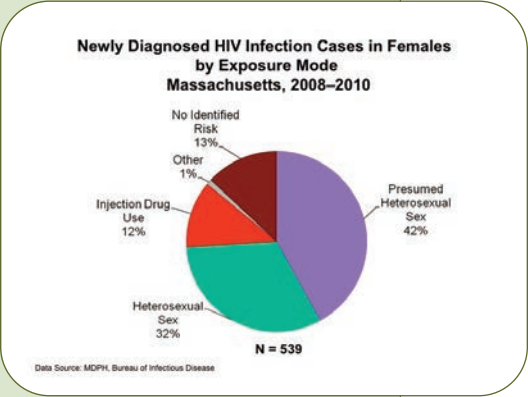
Distribution of Chlamydia and Gonorrhea Cases by Gender, Massachusetts, 2011



While the male-to-female ratio of gonorrhea cases is about 6:5, women are over-represented among chlamydia cases by a ratio of 2.5:1.

The greater number of chlamydia cases in women is attributable in part to increased screening in women as compared to men.

From 2008 to 2010, the exposure modes for the 539 newly diagnosed HIV cases reported in women in Massachusetts were attributed to presumed heterosexual sex (42%), heterosexual sex (32%), injection drug use (12%), and other exposure modes (1%). Thirteen percent of women were reported with no identified risk for HIV exposure.



From 2008 to 2010, 49% of women reported with HIV infection diagnoses were born outside of the U.S. For men diagnosed from 2008 to 2010, only 24% were born outside of the U.S.

Eighty-five percent of women diagnosed with HIV infection who were born outside of the U.S. were born in regions of the world where heterosexual sex is the predominant mode of transmission of HIV infection.

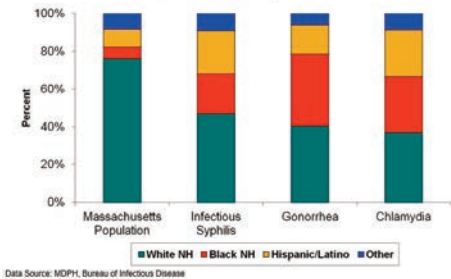
RACIAL/ETHNIC DISPARITIES

RACIAL/ETHNIC DISPARITIES IN STD RATES

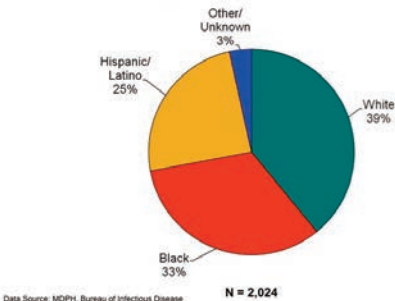
As stated in the 2010 Sexually Transmitted Disease Surveillance Report from the Centers for Disease Control and Prevention (CDC), national surveillance data show higher rates of reported STIs among some racial or ethnic minority groups when compared with rates among white residents. Race and ethnicity in the United States are risk markers that correlate with other more fundamental determinants of health status such as poverty, unemployment, low educational attainment, access to quality health care, and living in communities with high prevalence of STDs. “Acknowledging the inequity in STD rates by race or ethnicity is one of the first steps in empowering affected communities to organize and focus on this problem.” (Source: CDC. Sexually Transmitted Disease Surveillance, 2010. Atlanta: U.S. Department of Health and Human Services; 2011.)

Although communities of color represent only 24% of the total Massachusetts population, these communities bear a disproportionate burden of STIs. In 2011, 53% of the reported infectious syphilis cases, 59% of the reported gonorrhea cases, and 63% of the reported chlamydia infection cases occurred in individuals from communities of color.

Racial/Ethnic Distribution of the General Population and Among Those Diagnosed with an STD
Massachusetts, 2011

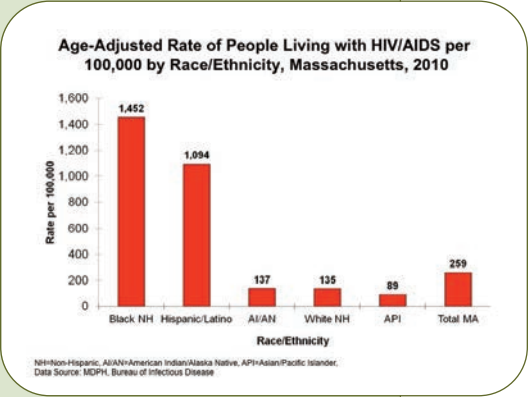


Newly Diagnosed HIV Infection Cases by Race/Ethnicity
Massachusetts, 2008–2010



From 2008 to 2010, the racial/ethnic distribution of reported newly diagnosed HIV infections in Massachusetts was: white (non-Hispanic) (39%), black (non-Hispanic) (33%), Hispanic/Latino (25%), and other/unknown (3%).

In Massachusetts, in 2010, the prevalence rate of people living with HIV/AIDS was highest among the black (non-Hispanic) and Hispanic/Latino populations. As compared to the white (non-Hispanic) population, the rate of people living with HIV/AIDS was 11 times higher among the black (non-Hispanic) population and eight times higher among the Hispanic/Latino population.

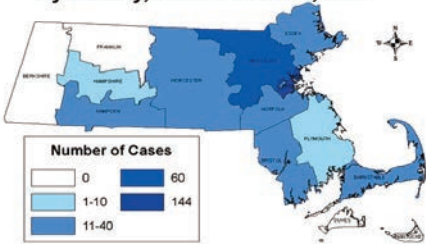


STDs AND HIV IN MEN WHO HAVE SEX WITH MEN

Notifiable disease surveillance data on syphilis and data from the National Gonococcal Isolate Surveillance Project suggest that some STDs are increasing in MSM, including men who have sex with both men and women. Because STIs and the behaviors associated with acquiring them increase the likelihood of acquiring and transmitting HIV infection, the rise in STIs among MSM may be associated with the increase in HIV diagnosis among MSM. (Source: CDC. Sexually Transmitted Disease Surveillance, 2010. Atlanta: U.S. Department of Health and Human Services; 2011.)

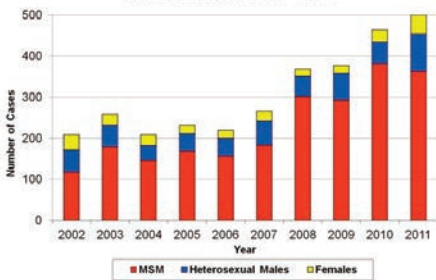
In 2011, 363 infectious syphilis cases were reported in MSM in Massachusetts, of which 144 (40%) were in Suffolk County.

Reported Infectious Syphilis in MSM by County, Massachusetts, 2011



Data Source: MDPH, Bureau of Infectious Disease

Number of Infectious Syphilis Cases among MSM, Heterosexual Males, and Females, Massachusetts, 2002–2011

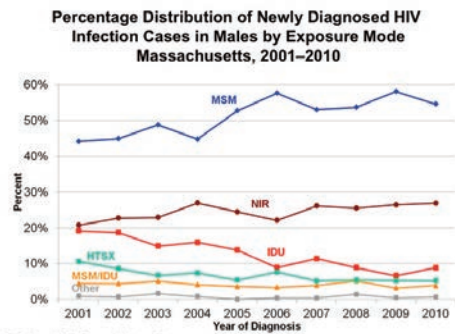
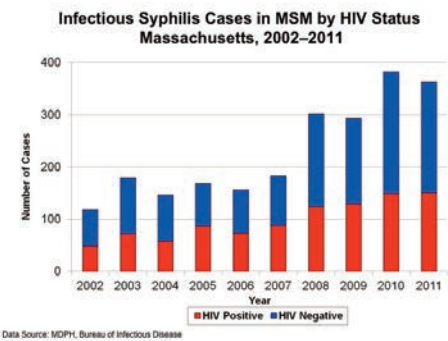


Data Source: MDPH, Bureau of Infectious Disease

From 2002 to 2011, MSM have accounted for the majority of infectious syphilis cases in Massachusetts, ranging from 57% in 2002 to 73% in 2011. During this time period the number of reported cases among MSM increased by over three times, from 118 to 363.

In 2011, 52% of reported infectious syphilis cases in MSM were reported among white individuals, 16% among black, 19% among Hispanic/Latino, 10% among individuals of other race/ethnicity, and 4% among individuals with unknown race/ethnicity. The median age of the cases was 36 years, the same median age of the previous year.

In 2011, 42% of the reported infectious syphilis cases in MSM occurred in individuals who reported that they were HIV-positive.



Among males, the proportion of reported HIV infection cases with male-to-male sex as the reported mode of exposure increased from 44% in 2001 to 55% in 2010.

SUMMARY OF STRENGTHS AND LIMITATIONS OF DATA

	HIV/AIDS Case Data	STD Case Data	Viral Hepatitis Case Data
Description	<ul style="list-style-type: none">• Collected by MDPH Bureau of Infectious Disease, HIV/AIDS Surveillance Program.• Reportable statewide.• All licensed healthcare providers are required by law to report.• HIV infection and AIDS cases are reported by name.• Individuals diagnosed out of state have been excluded in analysis.	<ul style="list-style-type: none">• Collected by MDPH Bureau of Infectious Disease, Division of STD Prevention.• Reportable statewide.• All labs and healthcare providers are required by law to report STIs (including syphilis, gonorrhea, chlamydia infection, lymphoma granuloma venereum, chancroid, granuloma inguinale, neonatal herpes infection)	<ul style="list-style-type: none">• Collected by MDPH Bureau of Infectious Disease, Office of Integrated Surveillance and Informatics Services.• Reportable statewide.• All laboratories and healthcare providers are required to report laboratory indicators of hepatitis B and C infection.
Strengths	<ul style="list-style-type: none">• Statewide reporting, population-based.• Risk information is available.• Completeness of reporting is high.• Comparable with other states.	<ul style="list-style-type: none">• Statewide reporting, population-based.• Comparable with other states.• Enhanced reporting of positive laboratory results.	<ul style="list-style-type: none">• Statewide reporting, population-based.• Enhanced reporting of acute cases, hepatitis B cases in child-bearing aged women and children and hepatitis C cases among youth ages 15–25.
Limitations	<ul style="list-style-type: none">• Under-reporting (10%–15%) hampers interpretation of HIV/AIDS case data.• Not all HIV/AIDS cases are reported at time of diagnosis (reporting lag).• HIV/AIDS data may be incomplete because some HIV-infected people may not have been tested or have entered care.	<ul style="list-style-type: none">• Under-reporting of up to 10% of STD cases.• Race/ethnicity is missing in 30% of gonorrhea and chlamydia infection cases.• Bias is introduced for some STDs, such as chlamydia infection, where screening of asymptomatic persons occurs more frequently in women than in men.	<ul style="list-style-type: none">• Race data are missing in 19% of confirmed acute hepatitis B and 10% of confirmed hepatitis C cases; ethnicity data are missing in 38% of acute hepatitis B and 64% of confirmed hepatitis C cases.• Risk history data is missing in a majority of reported hepatitis B and C cases.

INTERPRETING STD, HIV/AIDS AND VIRAL HEPATITIS DATA

All viral hepatitis data reported are current as of July 24, 2012, all HIV/AIDS data are as of July 1, 2012, and all STD data are as of September 1, 2012.

I. HIV/AIDS Exposure Mode Definitions

The HIV/AIDS exposure mode indicates the most probable risk behavior associated with HIV infection. Assignment of exposure mode is done in accordance with Centers for Disease Control and Prevention guidelines when multiple exposure modes are reported. Following is a description of the exposure mode categories:

- **MSM (Male to Male Sex):** Includes men who report sexual contact with other men, and men who report sexual contact with both men and women. Please note the acronym MSM is also used to refer to “men who have sex with men”.
- **IDU (Injection Drug Use):** Cases in persons who report injection drug use.
- **MSM/IDU:** Cases in men who report both injection drug use and sexual contact with other men.
- **Heterosexual Sex:** Cases in persons who report specific heterosexual sex with a person with, or at increased risk for, HIV infection (e.g. an injection drug user). The sub-categories for this mode of transmission are listed below.
 - Heterosexual Sex w/ an Injection Drug User
 - Heterosexual Sex w/ a person w/ HIV infection or AIDS
 - Heterosexual Sex w/ Bisexual male
 - Other Heterosexual Sex: Includes all other sub-categories of risk, such as heterosexual contact with a person infected through a blood transfusion.
- **Presumed Heterosexual:** Cases among females who report heterosexual sex but do not report any other personal risk or any knowledge of specific risk in their male sex partners. As of January 1, 2011, males that were previously grouped in this category are categorized as No Identified Risk. Presumed Heterosexual is an exposure mode category used by the Massachusetts HIV/AIDS Surveillance Program. The Centers for Disease Control and Prevention (CDC) categorizes these cases as No Identified Risk.
- **Pediatric:** Infection before the age of 13 years, including mother to child transmission through pregnancy, childbirth or breastfeeding and blood transfusions to children.
- **NIR (No Identified Risk):** Cases in persons with no reported history of exposure to HIV through any of the listed exposure categories. Follow-up is conducted to determine risk for those cases that are initially reported without a risk identified. Includes cases among men who were previously categorized as Presumed Heterosexual.

II. References to Newly Diagnosed HIV Infections

Due to reporting delays related to site-specific reporting issues, all HIV/AIDS data reflect HIV diagnosed through 2010. Newly diagnosed HIV infections/cases include all persons diagnosed with HIV in 2010, including those who were concurrently or subsequently diagnosed with AIDS.

III. Race/Ethnicity of STD and HIV/AIDS Cases

Race/ethnicity references to white residents and black residents represent persons who are white non-Hispanic and black non-Hispanic, respectively. All references to Hispanic/Latino for race/ethnicity represent persons of Hispanic/Latino heritage regardless of race.

IV. STD Case Reports and Analyses

All information on STD cases reflect year of report and all incidence calculations represent crude rates. The distribution of STD cases with unknown race/ethnicity has changed from previous issues of this report: cases with unknown race/ethnicity are now removed from the analyses instead of redistributed. Due to this change, STD incidence rates by race/ethnicity are lower for all years than previously reported. U.S. Census, 2000 data are used for denominators in STD rate calculations for the years 2002 through 2009 and U.S. Census 2010 data are used for denominators for the years 2010 through 2011. Therefore caution should be used in interpreting trends in rates between these two time periods.

V. Cell Suppression Methodology of STD and HIV/AIDS Data

Values less than five are suppressed for populations less than 50,000 or for unknown values. Additional values may be suppressed to prevent back calculation.

STD, HIV/AIDS AND VIRAL HEPATITIS CONTACT INFORMATION

Division of STD Prevention & HIV/AIDS Surveillance, and Ratelle STD/HIV Prevention Training Center			
Topic	Contact	Email	Phone
Policy Development and Administration	Brenda Cole (STD Division Director)	BrendaCole@state.ma.us	617-983-6941
Sylvie Ratelle STD/HIV Prevention Training Center	Katherine Hsu (Medical Director) Janine Dyer (Deputy Director)	Katherine.Hsu@state.ma.us Janine.Dyer@state.ma.us	617-983-6948 617-983-6964
STD/HIV/AIDS Surveillance and Epidemiology	Betsey John (Director, HIV/ AIDS and STD Surveillance) Yuren Tang (STD Epidemiologist)	Betsey.John@state.ma.us Yuren.Tang@state.ma.us	617-983-6570 617-983-6554
STD Clinical Services	Katherine Hsu (Medical Director) Barbara Coughlin (Public Health Nurse)	Katherine.Hsu@state.ma.us Barbara.Coughlin@state.ma.us	617-983-6948 413-586-7525
STD Disease Intervention Field Services and STD Partner Notification	David Goudreau (Field Operations Manager)	David.Goudreau@state.ma.us	617-983-6835
STD Health Education, Training, and Prevention	Brenda Hernandez (Special Projects Coordinator) Laura Smock (IPP Coordinator)	Brenda.Hernandez@state.ma.us Laura.Smock@state.ma.us	617-983-6943 617-983-6961
Office of HIV/AIDS			
Policy, Planning, Resource Allocation, Data Management, Capacity Building, Research and Evaluation	Dawn Fukuda (Director, Office of HIV/AIDS) Maura Driscoll Mimos (Interim Director of Research and Evaluation) Tammy Goodhue (Director of Capacity Building and Health Communications)	Dawn.Fukuda@state.ma.us Maura.Mimos@state.ma.us Tammy.Goodhue@state.ma.us	617-624-5303 617-624-5324 617-624-5338
Administration and Finance, Personnel, Contracts and Procurement, Budget	Bob Carr (Deputy Bureau Director) Ceci Dunn (Director of Operations) Cheryl Bernard (Director of Administration and Finance)	Bob.Carr@state.ma.us Ceci.Dunn@state.ma.us Cheryl.Bernard@state.ma.us	617-624-5317 617-624-5370 617-624-5355
Consumer Office	Paul Goulet (Director of Consumer Office)	Paul.b.Goulet@state.ma.us	617-624-5389
Prevention and Screening	Barry Callis (Director of Prevention and Screening)	Barry.Callis@state.ma.us	617-624-5316
Medical Case Management and Health Related Support Services	Linda Goldman (Director of Client Health Services)	Linda.Goldman@state.ma.us	617-624-5347
Viral Hepatitis Program			
Viral Hepatitis Programs	Daniel Church (Viral Hepatitis Prevention Coordinator, Division of Epidemiology and Immunization)	Daniel.Church@state.ma.us	617-983-6830
Viral Hepatitis Surveillance and Epidemiology	Shauna Onofrey (Epidemiologist) Kerri Barton (Epidemiologist)	Shauna.Onofrey@state.ma.us Kerri.Barton@state.ma.us	617-983-6776 617-983-6876

STD, HIV/AIDS AND VIRAL HEPATITIS RESOURCES

Training

Professional training to community based organizations, local public health departments, and medical providers can be requested and is free of charge.

Type of Training	Contact Information and Website
STD Education, STD Partner Notification, and STD Reporting	617-983-6940 www.mass.gov/dph/cdc/std
HIV/AIDS Reporting and Surveillance Projects	617-983-6560 www.mass.gov/dph/cdc/aids
HIV/AIDS Provider Trainings	617-624-5338 www.mass.gov/dph/aids
Viral Hepatitis Education	617-983-6830 http://www.mass.gov/eohhs/gov/departments/dph/programs/id/epidemiology/hepatitis/hepatitis-c/viral-hepatitis-educational-materials.html
STD/HIV Diagnosis, Treatment, and Management	617-983-6945 www.RatellePTC.org

Material and Clinical Toolkits

Health education materials and clinical toolkits can be requested free of charge.

Type of Material	Contact Information and Website
STD, HIV, Viral Hepatitis Fact Sheets	617-983-6940 http://www.mass.gov/eohhs/docs/dph/cdc/factsheets/std-brochure.pdf
HIV/AIDS Reporting for Health Care Providers Brochure	617-983-6560 http://www.mass.gov/eohhs/gov/departments/dph/programs/id/hivaids-surveillance/reporting/
Viral Hepatitis Posters and Brochures	617-983-6800 http://www.maclearringhouse.com/category/HEP.html
STD/HIV Diagnosis, Treatment, and Management Toolkits	617-983-9645 www.RatellePTC.org

MDPH and MDPH Funded Websites

Division of STD Prevention
HIV/AIDS Bureau
HIV/AIDS Surveillance
Viral Hepatitis Program
Sylvie Ratelle STD/HIV Prevention Training Center

www.mass.gov/dph/cdc/std
www.mass.gov/dph/aids
www.mass.gov/dph/cdc/aids
www.mass.gov/hepc
www.RatellePTC.org

National Websites

Center for Disease Control and Prevention
Division of STD Prevention
Division of HIV/AIDS Prevention
Division of Viral Hepatitis
National Network of STD/HIV Prevention
Training Centers
CDC funded viral hepatitis online training

www.cdc.gov
www.cdc.gov/std
www.cdc.gov/hiv
www.cdc.gov/ncidod/diseases/hepatitis

www.stdhivpreventiontraining.org
<http://depts.washington.edu/hepstudy/>

